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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/629,415	08/01/2000	Mark C. Fowler	0100.0001150	6068

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EXAMINER	
CHUNG, DANIEL J	
ART UNIT	**PAPER NUMBER**
2672	7

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

TS

Office Action Summary	Application No.	Applicant(s)	
	09/629,415	FOWLER ET AL.	
	Examiner	Art Unit	
	Daniel J Chung	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-8,10-12 and 14-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6-8* is/are allowed.

6)☒ Claim(s) *2-5,10-12 and 14-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claims 2-8, 10-12 and 14-21 are presented for examination. Claims 1,9 and 13 have been cancelled and claims 17-21 have been added by the amendment filed on 8-21-2003. This office action is in response to the amendment filed on 8-21-2003.

The objection to the specification has been maintained.

Specification

Please review the application and correct all informalities.

As provided in 37 CFR 1.77(b), the specification of a utility application should include the section for "BRIEF SUMMARY OF THE INVENTION". However, this particular section is not presented in this Application. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2,10 and 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomson et al (6,501,474) in view of Long et al (6,483,519)

Regarding claim 17, Thomson et al discloses that the claimed feature of a system for traversing and rendering a graphic primitive, comprising: a setup engine [30] that outputs representative values of a graphic primitive; a raster engine [32] that receives the representative values of the graphic primitive and forms therefrom representative pixels, the raster engine having at least a scan module that scans only pixels within the graphic primitive and assigns data values to each of the pixels and a look-ahead module that identifies pixels that are inside of the primitive; wherein the look-ahead module processes [54,56,72,80] successive pixels one at a time using edge functions ["edge functions"] to determine whether a next pixel is within the graphic primitive; and wherein the scan module [32] scans a pixel previously identified as being within the graphic primitive while the look-ahead module processes the next pixel. (See Abstract, Fig 2, Fig 3, col 2 line 30-col 3 line 10)

Thomson et al does not explicitly disclose that "scanning a pixel within the primitive **while** the look-ahead module processes the next pixel." However, such limitation is shown in the teaching of Long et al. ["The operation of the edge processing module 400 [look-ahead module in recited claims] **during** a scan line render operation [scan module in recited claims] ..."] (See col 11 line 50-53, Abstract, Fig 4) It would have been obvious to one skilled in the art to incorporate the teaching of Long et al into the teaching of Thomson et al, in order to provide "processing graphic objects for fast rasterised rendering" (See Title, Abstract line 20 in Long et al), as such improvement is also advantageously desirable in the teaching of Thomson et al for "producing higher-

quality graphics at a given frame rate or faster rendering of a give image." (See col 2 line15-20 in Thomson et al)

Regarding claim 2, Thomson et al fails to teach that the scan module is structured to perform block mode scanning. However, employing **block traversal algorithms** for traversing and rendering a graphic primitives is well known in an analogous art (See Spec p.3 line 29-31 in presented application), in order to generate the primitives effectively at faster processing time. Therefore, it would have obvious to one having ordinary skill in the art at the time of Applicant's invention to include such block mode scanning into the teaching of Thomson et al, as such improvement is also advantageously desirable in the teaching of Thomson et al for "producing higher-quality graphics at a given frame rate or faster rendering of a give image." (See col 2 line15-20 in Thomson et al)

Regarding claim 10, Claim 10 is equivalent to claim 2, and thus the rejection to claim 2 hereinabove is also applicable to claim 10.

Regarding claim 14, Thomson et al discloses that a data value is assigned to a current pixel within the triangular primitive, and a data value is saved ["frame buffer"; 38] for a next pixel within the triangular primitive only when the next primitive is within the triangular primitive. (See Abstract, Fig 2, Fig 3)

Regarding claim 15, Thomson et al discloses that data values are assigned only to pixels within the triangular primitive and never to pixels outside of the triangular primitive. (See Abstract, Fig 2, Fig 3)

Regarding claim 16, Thomson et al discloses that the second module forms a plurality of data values for each pixel. (See Abstract, Fig 2, Fig 3)

Regarding claim 18, Thomson et al discloses that each edge function is associated with one particular edge of the graphic primitive and determines whether or not the next pixel in the horizontal direction is within the graphic primitive with respect to the one particular edge. (See Fig 3, col 6 line 40-50, col 6 line 56-col 7 line 4, col 7 line 25-42)

Regarding claim 19, Thomson et al discloses that each edge function returns a positive result if the next pixel is within the graphic primitive with respect to the one particular edge. (See Fig 3, col 6 line 40-50, col 6 line 56-col 7 line 4, col 7 line 25-42)

Regarding claims 20-21, claims 20-21 are similar in scope to the claim 17, and thus the rejection to claim 17 hereinabove is also applicable to claims 20-21.

Claims 3-5 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomson et al (6,501,474) in view of Long et al (6,483,519), and further in view of Malamy et al (6,094,201).

Regarding claims 3 and 4, Thomson et al discloses that the graphic primitive is a triangle, and wherein the representative values are at least one edge function of the triangle/a longest side of the triangle and slope values for at least one vertex of the triangle. (See Abstract, Fig 2, Fig 3, col 2 line 30-col 3 line 10) Thomson et al does not explicitly discloses that the representative values are edge function of the triangle or edge function of a longest side of the triangle. However, such limitation is shown in the teaching of Malamy et al. (See Abstract, Fig 2, Fig 3, Fig 4, col 2 line 45-54, col 5 line 1-5) It would have been obvious to one skilled in the art to incorporate the teaching of Malamy et al into the teaching of Thomson et al, in order to "improve overall performance without increasing system cost or introducing additional component architecture" (See col 2 line 27-31, col 2 line 45-54 in Malamy et al), as such improvement is also advantageously desirable in the teaching of Thomson et al by system optimization.

Regarding claim 5, Thomson et al discloses that the scan module is structured to check a next adjacent pixel while processing a current pixel to determined if the next adjacent pixel is inside the triangle. (See Abstract, Fig 2, Fig 3, col 2 line 30-col 3 line 10)

Regarding claims 11-12, Claims 11-12 are respectively equivalent to claims 3-4, and thus the rejections to claims 3-4 hereinabove are also respectively applicable to claims 11-12.

Allowable Subject Matter

Claims 6-8 are allowed

Response to Arguments/Amendments

Applicant's arguments with respect to claims 2-8, 10-12 and 14-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Chung whose telephone number is (703) 306-3419. He can normally be reached Monday-Thursday and alternate Fridays from 7:30am- 5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael, Razavi, can be reached at (703) 305-4713.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306 (Central fax)

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

djc
December 29, 2003

MATTHEW LUU
PRIMARY EXAMINER